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the course of time through attack by aggressive media. More-over, exact adjustment of the mirrors and thus an elaborate adjusting device is necessary. Also, the adjustable mirrors form gaps and similar cavities which delay the exchange of the substance to be measured and thus lead to memory effects.

According to EP 0 780 681 A2, the reference beam traverses a reference cell filled with reference gas, but this involves the above-described disadvantages of prismatic beam splitting. Furthermore, it does not permit changes in the optical properties of the measuring cell to be detected. The miniaturization of such assemblies is limited.

Alternatively, measuring and reference beams are both guided through the measuring cell but measured in different wave ranges. The reference beam is either measured in such broadband fashion that the intensity change through extinction at the characteristic wavelengths of the substance to be measured is irrelevant, or it is measured in narrow-fashion band like the measuring beam but at another wavelength. The disadvantage of the first method is that a change in spectral distribution of the radiation source due to temperature fluctuations or signs of aging will generally influence measuring and reference signals differently. The disadvantage of the second method is the uncertainty about the nonoccurrence of absorption at the reference wavelength due to unknown substances. This is dangerous specifically in the case of ambient air monitoring for toxic gases since absorption at the reference wavelength

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leads to a reduction of sensitivity in the measuring path.

According to US 4,281,248 the radiation of an IR radiation source is supplied to optopneumatic detectors with a chopper alternatively via a reference radiation path and a measuring radiation path. The gas to be measured flows through a long cell in the measuring radiation path and then through a short cell in the reference radiation path.

According to US 5,876,674 the radiation of a radiation source is split into two radiation paths and the gas to be measured guided through an absorption chamber having in each radiation path two optical elements formed as aligned glass rods each at different distance so that the optical path length in the absorption chamber is greater between one pair of optical elements than with the other pair.

The invention is based on the problem of providing an analyzer for determining concentration by transmission measurement which is compact and stable toward outside mechanical and thermal influences and permits a wide concentration range - from a few ppm to several ten percent - to be determined reliably and continuously.

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